

REMARKS

I. Status of Claims

By this Amendment, Applicants amend claims 17-19, 27-29, and 33 and add new claims 36 and 37. Claims 1-37 are therefore pending in this application.

In the Office Action of September 24, 2004,¹ claims 9, 20, 21, 25 and 26 were rejected under 35 U.S.C. § 112, first paragraph, as “failing to comply with the enablement requirement;” claims 17-19 and 27-29 were rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter regarded as the invention; claims 1, 2, 4-16, 20-26 and 30-35 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,181,805 to *Koike et al.* (“*Koike*”); and claim 3 was rejected under 35 U.S.C. § 103(a) as unpatentable over *Koike* and U.S. Patent No. 5,542,006 to *Shustorovich et al.* (“*Shustorovich*”). The Office Action indicated that claims 17-19 and 27-29 would be allowable if rewritten in independent form with the base and intervening claim features and to overcome the rejection under 35 U.S.C. § 112, second paragraph. Applicants appreciate the indication of allowable subject matter and address the rejections and new claims below.

II. Rejection of claims 9, 20, 21, 25 and 26 under 35 U.S.C. § 112, first paragraph

The Examiner alleged that each of claims 9, 20, 21, 25 and 26 “contains subject matter which was not described in the specification in such a way as to enable one skilled in the art . . . to make and/or use the invention” (Office Action “OA,” at 2). Applicants traverse the rejection for the following reasons.

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

The test for enablement is whether the disclosure contains sufficient information to enable one reasonably skilled in the pertinent art to make and use the claimed invention without “undue experimentation.” M.P.E.P. § 2164.01. It is well-settled that “[d]etailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention.” M.P.E.P. § 2164. The issue in this case is whether a skilled artisan, given the teachings of the specification and what is known in the prior art, could make and use the invention without undue experimentation.

Initially, Applicants submit that the Examiner failed to meet the initial burden in rejecting the claims. As the M.P.E.P. makes clear, “[i]n order to make [an enablement] rejection, the examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention.” M.P.E.P. § 2164.04 (internal citations omitted). The Examiner’s conclusions regarding enablement should be based on specific findings of fact that are supported by evidence. *See id.* As M.P.E.P. § 2164.04 articulates, “the minimal requirement is for the examiner to give reasons for the uncertainty of the enablement.” M.P.E.P. § 2164.04 (internal citations omitted).

In this case, the Examiner alleged, with respect to claims 21 and 26, that “there is no support in the original disclosure that clearly illustrates of how the pattern recognizers are operating **in parallel** (emphasis added) to generate the plurality of recognition results” (OA at 2). With regard to claims 9, 20 and 25, the Examiner alleged that “there is no support . . . regarding the **complementary** recognition algorithms or **complementary** (emphasis added) pattern recognizers” (OA at 2). These conclusory allegations do not suffice as reasons for the uncertainty of the enablement. Further, the Examiner failed to provide specific findings

supported by evidence to support the conclusions regarding enablement. The Examiner's bare allegations in and of themselves do not establish a reasonable basis to question the enablement.

Moreover, Applicants point out that enablement does not turn on whether the original disclosure "clearly illustrates" certain subject matter. Instead, the issue is whether a skilled artisan, given the teachings of the specification and what is known in the prior art, could make and use the invention without undue experimentation. To the extent the Examiner is alleging that certain aspects of Applicants' claims are not described such that a skilled artisan would recognize that Applicants had possession of the claimed invention, the enablement rejection under 35 U.S.C. § 112, first paragraph, is improper.

For at least the foregoing reasons, the Examiner has not satisfied the initial burden to establish a reasonable basis to question enablement given the knowledge of skill in the art combined with the teachings and examples provided in the specification. That is to say, the Examiner has not provided any reasons or evidence to support, *prima facie*, that a skilled artisan could not make and use the invention without undue experimentation.

The lack of a *prima facie* showing notwithstanding, Applicants submit that claims 9, 20, 21, 25 and 26 are enabled. Applicants' disclosure, which includes the claims as filed in the original specification, contains sufficient information to enable one skilled in the pertinent art to make and use the claimed invention without undue experimentation. Given Applicants' specification² (see, e.g., Fig. 2 and accompanying text; see also Background of the Invention, page 3) and the claim language itself, undue experimentation would not be required to implement and use a method of processing an input object for pattern recognition including

² In referring to the specification herein, Applicants do not intend to limit the scope of the claims to the exemplary embodiments shown in the drawings and described in the specification. Rather, Applicants expressly affirm their entitlement to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

“outputting [a] segmented target object and . . . at least one transformed object to a plurality of complementary recognizers,” as recited in claim 9. Further, undue experimentation would not be required to perform a method involving “a plurality of complementary recognition algorithms,” as recited in claim 20. Likewise, a skilled artisan could make and use a pattern recognition system including “a plurality of complementary pattern recognizers,” as recited in claim 25, without undue experimentation. In addition, a skilled artisan considering the specification and the claim language itself could, without undue experimentation, implement and use a method of aggregating recognition results including “performing in parallel a plurality of substantially identical recognition algorithms,” as recited in claim 21, as well as make and use “a plurality of substantially identical pattern recognizers operating in parallel,” as recited in claim 26.

For at least the foregoing reasons, Applicants request withdrawal of the enablement rejection of claims 9, 20, 21, 25 and 26 under 35 U.S.C. § 112, first paragraph.

III. Rejection of claims 17-19 and 27-29 were rejected under 35 U.S.C. § 112, second paragraph

The Examiner averred that claims 17-19 and 27-29 “are claiming equations without . . . denoting the definition of the symbols and the functions.” Applicants amend these claims to more appropriately define the subject matter therein. As amended, claims 17-19 and 27-29 are fully compliant with 35 U.S.C. § 112, second paragraph. Applicants thus request withdrawal of the § 112, second paragraph, rejection of these claims.

Applicants acknowledge, with appreciation, the indication that claims 17-19 and 27-29 are drawn to allowable subject matter. Applicants further submit these claims should be allowed by virtue of their respective dependence upon base claims 16 and 22, which should be allowed for the reasons discussed below. Because claims 17-19 and 27-29 depend from base claims that

should be allowed, and since the § 112, second paragraph, rejection of these claims has been overcome, Applicants request the timely allowance of claims 17-19 and 27-29.

IV. Rejection of claims 1, 2, 4-16, 20-26 and 30-35 under 35 U.S.C. § 102(e)

Applicants traverse the rejection of claims 1, 2, 4-16, 20-26 and 30-35 under 35 U.S.C. § 102(e) because *Koike* does not anticipate these claims. In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim at issue must be found, either expressly described or under principles of inherency, in a single prior art reference. Further, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim[s]." *See* M.P.E.P. § 2131. Finally, "[t]he elements must be arranged as required by the claim." *Id.*

With regard to claim 1, *Koike* does not teach or suggest at least "performing at least one transform on the segmented target object to generate at least one transformed object," as claimed. *Koike* describes an image detection system (Abstract). The Examiner alleges that *Koike*'s "cut-out section 102" and "detecting section 103" form a segmented target object from an image taken by input section 101 and that *Koike*'s "position shifting section 108" performs "at least one transform . . . on the segmented target object . . ." (OA at 3). Applicants disagree with the Examiner's interpretation of *Koike*. Even if *Koike*'s cut-out section 102 and detecting section 103 were to form a "segmented target object" from an image taken by image input 101, *Koike* does not disclose performing at least one transform on that segmented target object. The features extracted from images received via input 101 are used to generate dictionary images, which are compared with test images taken by an input 105 (col. 4, lines 40-65; Fig. 1). *Koike*'s position shifting section 108 provides position values that are used to cut out particular regions from a test image received via image input 105 so that each of those regions can be matched against a set of dictionary images, shifting section 108 does not operate to shift the position of features extracted

from images received via input 101. Further, providing position values to cut out particular regions from a test image does not constitute “performing at least one transform on the segmented target object to generate at least one transformed object,” as claimed. Indeed, neither the position shifting section 108, nor any other element of *Koike*’s system, performs “at least one transform on the segmented target object to generate at least one transformed object,” as claimed.

Further, *Koike* does not teach or suggest at least “outputting the segmented target object and the at least one transformed object to at least one pattern recognizer,” as recited in claim 1. The Examiner alleged that *Koike* teaches the claimed “outputting” because “the segmented object comes out from . . . [dictionary image storage] 104 . . . [to matching section] 106” and because “the transformed object comes out from . . . [position shifting section] 108 [to matching section 106].” Applicants disagree with this interpretation of *Koike*. Even if *Koike*’s matching section 106 were consistent with the claimed “pattern recognizer,” *Koike* does not teach or suggest outputting a segmented target object and at least one transformed object to the matching section. *Koike*’s position shifting section 108 does not output a transformed object to matching section 106; instead, it provides matching position values to a matching region cut-out section 107a that is included within section 106 (col. 4, lines 40-65; Fig. 1). According to *Koike*, matching section 106 receives a test image from input 105 and dictionary images from storage 104 (col. 4, lines 1-65; Fig. 1). Outputting test images and dictionary images, as disclosed by *Koike*, is not the same as outputting a segmented target object and at least one transformed object, as claimed. Further, providing regions cut out from a target image does not constitute outputting a segmented target object and at least one transformed object, as claimed.

For at least the foregoing reasons, *Koike* fails to teach the claimed “performing” and “outputting” features of claim 1. Because *Koike* does not teach each and every feature of claim

1, as a matter of law, it cannot anticipate this claim. As such, the rejection of claim 1 under 35 U.S.C. §102(e) based on *Koike* should be withdrawn.

Independent claim 11 recites a combination including:

detecting a target object within the input object; [and]

segmenting the target object from the input object to form a plurality of segmented target objects.

Koike does not teach or suggest at least these features. Receiving a test image and comparing each of various regions of that test image with a set of stored dictionary images, as disclosed by *Koike*, does not constitute “detecting a target object within [an] . . . input object” and “segmenting the target object from the input object to form a plurality of segmented target objects,” as claimed. Although *Koike* mentions cutting out various regions of a test image, this functionality is not the same as segmenting a target object to form *a plurality of segmented objects*. *Koike* does not teach each and every feature of claim 11 and therefore cannot anticipate claim 11.

Independent claim 16 recites a combination including:

receiving a segmented target object and at least one transform of the segmented target object;

performing at least one pattern recognition algorithm on the segmented target object and the at least one transform to generate a plurality of recognition results; [and]

aggregating the plurality of recognition results to determine a recognition decision.

Koike fails to disclose at least the claimed “receiving.” The Examiner alleges that *Koike* discloses receiving “the segmented object . . . from . . . element 104” and receiving at least one transform of the segmented target object “from element 108” (OA at 6). Applicants disagree. *Koike* does not disclose receiving a segmented target object and at least one transform of the

segmented target object. *Koike*'s matching section 106 receives dictionary images from storage 104 and test images from input 105. In addition, *Koike*'s position shifting section 108 in the matching section 106 provides position values to region cut-out section 107a, also included in matching section 106. Even if the dictionary images were construed as "segmented target" objects, *Koike* does not disclose receiving at least one transform of those images. *Koike* does not disclose that position shifting section 108 provides at least one transform of the dictionary images. The shifting section 108 provides position values to region cut-out section 107a, which cuts out regions from a test image taken by input 105. Indeed, neither the matching section 106, nor any other element disclosed by *Koike*, receives a segmented target object and at least one transform of the segmented target object.

Further, *Koike* fails to disclose "performing at least one pattern recognition algorithm," as required by claim 16. Although *Koike* describes computing degrees of similarity between regions of a test image and dictionary images generated from features extracted from library images (col. 4, lines 46 – col. 5, line 22), it does not teach or suggest performing at least one pattern recognition algorithm on a segmented target object and *at least one transform of that segmented target* to generate a plurality of recognition results, as claimed.

Koike also fails to teach or suggest "aggregating the plurality of recognition results to determine a recognition decision," as required by claim 16. *Koike*'s disclosure of a detecting section 109 that detects where the degree of similarity is maximal does not teach or suggest the claimed "performing" or "aggregating." Although detecting section 109 might, as the Examiner alleges, "find the highest degree of similarity for the matching process," it does not aggregate recognition results generated by performing at least one pattern recognition algorithm on a segmented target object and at least one transform of that segmented target, as claimed. Because

Koike does not teach each and every feature of claim 16, as a matter of law, it cannot anticipate this claim.

Independent claim 22 recites a combination including:

at least one transform module to perform at least one transform on
... [a detected] target object to form a plurality of transformed
objects; [and]

at least one pattern recognizer for generating a plurality of
recognition results based on the target image and the plurality of
transformed objects.

Koike does not teach or suggest at least these features. The Examiner rejected claim 22 for the same reasons set forth for claims 1, 11, and 16 (OA at 6). Although *Koike* mentions cutting out various regions of a test image and comparing each of these regions with a set of dictionary images, it does not disclose a transform module to perform at least one transform on a detected target object to form a plurality of transformed objects. Cutting a test image into regions is not the same as performing a transform on a detected target object to form a plurality of transformed objects. *Koike* also fails to disclose “at least one pattern recognizer for generating a plurality of recognition results based on the target image and the plurality of transformed objects,” as required by claim 22. Although *Koike*’s matching section 106 computes similarity between regions of a test image and dictionary images, it does not generate a plurality of recognition results based on a target image and a plurality of transformed objects, as claimed. Because *Koike* does not teach each and every feature of claim 22, it cannot anticipate this claim.

Independent claim 30 recites a combination of elements including:

an object detector to detect a target object and to form a plurality
of segmented target objects; [and]

at least one pattern recognizer for generating a plurality of
recognition results based on the plurality of segmented target
objects.

Koike does not teach or suggest at least these features. For example, for at least reasons similar to those presented above in connection with claim 11, *Koike* does not teach or suggest at least the “object detector” recited in claim 30. Because *Koike* does not teach each and every claimed feature, it cannot anticipate claim 30.

Independent claim 32 recites, *inter alia*, “recognizer means for performing at least one pattern recognition algorithm on the input object and the at least one transformed object to generate a plurality of recognition results.” *Koike* does not teach or suggest this feature. Although *Koike* mentions a matching section 106 and a detecting section 109, neither of these elements (or any other element) performs at least one pattern recognition algorithm on the input object and the at least one transformed object to generate a plurality of recognition results. *Koike* merely describes determining degrees of similarity between regions of a test image and dictionary images and finding the particular region of the test image and the particular dictionary image where the degree of similarity is maximal. Because *Koike* does not teach each and every claimed feature, it cannot anticipate claim 32.

Independent claims 33-35, although of different scope, recite subject matter similar to that recited in claim 1, 11 and 16, respectively. Specifically, independent claim 33 recites, *inter alia*:

transform means for performing at least one transform on the segmented target object to generate at least one transformed object;
and

output means for outputting the segmented target object and the at least one transformed object to at least one pattern recognizer.

Claim 34 recites, *inter alia*:

segmentation means for segmenting at least one target object from the input object to form a plurality of segmented target objects.

And claim 35 recites, *inter alia*:

means for receiving a segmented target object and at least one transform of the segmented target object;

means for performing at least one pattern recognition algorithm on the segmented target object and the at least one transform of the segmented target object to generate a plurality of recognition results; [and]

means for aggregating the plurality of recognition results to determine a recognition decision.

Koike does not anticipate independent claims 33, 34 and 35 for at least reasons similar to those presented above in connection with claims 1, 11, and 16, respectively. Because *Koike* does not teach each and every feature of claims 33-35, as a matter of law, it cannot anticipate these claims.

Each of claims 2, 4-10, 12-15, 20, 21, 23-26 and 31 depends upon independent claim 1, 11, 16, 22 or 30. *Koike* fails to anticipate claims 2, 4-10, 12-15, 20, 21, 23-26 and 31 for at least the same reasons as those discussed above for independent claims 1, 11, 16, 22 and 30. Because claims 1, 2, 4-16, 20-26 and 30-35 are not anticipated by *Koike*, the rejection of these claims under 35 U.S.C. § 102(e) should be withdrawn. Applicants thus request withdrawal of the rejection under 35 U.S.C. § 102(e) and the timely allowance of these claims.

VI. Rejection of claim 3 under 35 U.S.C. § 103(a)

Applicants traverse the rejection of claim 3 under 35 U.S.C. § 103(a) because a case for *prima facie* obviousness has not been established. To establish *prima facie* obviousness under 35 U.S.C. § 103(a), three requirements must be met. First, the applied references, taken alone or in combination, must teach or suggest each and every element recited in the claims. *See* M.P.E.P. § 2143.03 (8th ed. 2001). Second, there must be some suggestion or motivation, either in the reference(s) or in the knowledge generally available to one of ordinary skill in the art, to combine or modify the reference(s) in a manner resulting in the claimed invention. Third, a

reasonable expectation of success must exist. Moreover, each of these requirements must “be found in the prior art, and not be based on applicant’s disclosure.” M.P.E.P. § 2143 (8th ed. 2001).

Claim 3 depends upon claim 1. As explained above, *Koike* does not teach or suggest each and every feature recited in claim 1. *Koike* therefore fails to teach or suggest each and every feature of claim 3, which includes all of the features of claim 1. In particular, *Koike* fails to teach at least the “performing at least one transform” and “outputting” subject matter recited in claim 1 and required by claim 3. In addition, as affirmed by the Examiner, *Koike* fails to teach or suggest that “the target object represents a handwritten character,” as recited in claim 3.

Shustorovich does not cure *Koike*’s deficiencies. *Shustorovich* describes a “neural-network based position detector which . . . determines the center position . . . of a character . . . within a field of such characters” (col. 6, lines 15-25; Abstract). *Shustorovich* does not teach or suggest at least “performing at least one transform” and “outputting,” as claimed. Accordingly, the applied references, taken alone or in combination, do not teach or suggest each and every feature of claim 3. As such, *prima facie* obviousness has not been established.

Furthermore, *prima facie* obviousness has not been established at least because the requisite motivation to modify *Koike* in view of *Shustorovich* is lacking. Determinations of obviousness must be supported by evidence on the record. See *In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001) (finding that the factual determinations central to the issue of patentability, including conclusions of obviousness by the Board, must be supported by “substantial evidence”). Further, the desire to combine references must be proved with “substantial evidence” that is a result of a “thorough and searching” factual inquiry. *In re Lee*, 277 F.3d

1338, 1343-1344 (Fed. Cir. 2002) (quoting *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52).

In this case, the Office Action does not show, by substantial evidence, that a skilled artisan considering *Koike* and *Shustorovich*, and not having the benefit of Applicants' disclosure, would have been motivated to combine those references in a manner resulting in Applicants' claimed combination. The Examiner alleges that a skilled artisan would have modified *Koike* in view of *Shustorovich* "to represent [a] handwritten character as [a] target object" (OA at 7). This allegation in the Office Action is not properly supported and does not establish that a skilled artisan would have modified *Koike* as alleged. That a handwritten character could be represented as a target object does not evidence that a skilled artisan would have combined the cited art to achieve that result. Applicants call attention to M.P.E.P. § 2143.01, which makes clear that: "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (citations omitted). The Office Action does not show that *Koike* or *Shustorovich* "suggests the desirability" of the alleged combination, and it provides no objective reason from the references for the combination. The Examiner provides no explanation or evidence as to why, other than to attempt to meet the terms of Applicants' claims, a skilled artisan would have combined the references as alleged. Moreover, the Office Action does not identify a proper motivation from the knowledge generally available to one skilled in the art. Applicants submit that the conclusions in the Office Action were not reached based on facts gleaned from the cited references and that, instead, teachings of the present application were improperly used to reconstruct the prior art.

For at least the foregoing reasons, *prima facie* obviousness has not been established with respect to claim 3. Applicants thus request withdrawal of the rejection of claim 3 under 35 U.S.C. § 103(a) and the timely allowance of this claim.

VII. New claims 36 and 37

New claims 36 and 37 should be allowed at least because they depend upon allowable base claims 11 and 34. Moreover the applied art fails to teach or suggest the features of new claims 36 and 37. Applicants thus request the timely allowance of these new claims.

VIII. Conclusion


The claimed invention is allowable over the references cited against this application. Applicants request the Examiner's reconsideration of the application in view of the foregoing, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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